

CLAIMS:

1. A data processing apparatus for decoding and reproducing coded data, said apparatus comprising:

a cache unit operable to store cached information including a physical start address of each content stored on an information storing medium and additional information corresponding to each content;

a FIFO control unit operable to obtain from said cache unit additional information corresponding to a content to be reproduced, and to set storage areas for an audio data FIFO, a video data FIFO, and a decoded video data FIFO on the basis of the additional information corresponding to the content to be reproduced; and

a data processing unit operable to obtain data from a data segment including data to be reproduced according to the physical start address of the content to be reproduced and the additional information corresponding to the content to be reproduced, to store one portion of the data in said audio data FIFO and another portion of the data in said video data FIFO, to obtain the another portion of the data from said video data FIFO, to decode the obtained data, to store the decoded data in said decoded video data FIFO, and to reproduce the one portion of the data stored in said audio data FIFO and the decoded data stored in said decoded video data FIFO.

2. The data processing apparatus as claimed in claim 1, wherein

the additional information corresponding to each content includes header information and segment information for a corresponding content, the corresponding content having a plurality of data segments;

the header information includes a horizontal video size, a vertical video size, a video depth, a maximum video data size in the plurality of data segments, and a maximum audio data size in the plurality of data segments for the corresponding

content;

the segment information includes a first frame number for each of the plurality of data segments, a number of frames in each of the plurality of data segments, and an address of delimiter information corresponding to each of the plurality of data segments relative to a start of data; and

said FIFO control unit calculates maximum FIFO storage areas required for decoding and reproducing the content to be reproduced on the basis of information specifying the content to be reproduced and the additional information corresponding to the content to be reproduced, and sets said storage areas for said audio data FIFO, said video data FIFO, and said decoded video data FIFO.

3. The data processing apparatus as claimed in claim 2, wherein

said FIFO control unit calculates a size of said storage area for said video data FIFO in bytes according to

$(\text{maximum video data size} \times P)$

and calculates a size of said storage area for said audio data FIFO in bytes according to

$(\text{maximum audio data size} \times P),$

where P is a number of segments to be stored in said video data FIFO and said audio data FIFO, and the maximum video data size and the maximum audio data size are obtained from the cached information stored in said cache unit.

4. The data processing apparatus as claimed in claim 2, wherein

said FIFO control unit calculates a size of said storage area for said decoded video data FIFO in bytes according to

$(\text{horizontal video size} \times \text{vertical video size} \times \text{video depth} \times p)$

where p is a number of frames to be stored in said decoded video data FIFO, and the horizontal video size, the vertical video size and the video depth are obtained from the cached information stored in said cache unit.

5. The data processing apparatus as claimed in claim 1, wherein said data processing unit processes:

a first thread which reads a data segment including frame data to be reproduced from said information storing medium, divides data stored in the data segment into audio data and video data, stores the audio data in said audio data FIFO, and stores the video data in said video data FIFO; and

a second thread which decodes the video data stored in said video data FIFO and stores the decoded video data from a frame specified for reproduction in said decoded video data FIFO.

6. The data processing apparatus as claimed in claim 5, wherein said data processing unit includes:

an audio reproduction processing unit operable to perform reproduction processing on the basis of the audio data stored in said audio data FIFO; and

a video reproduction processing unit operable to perform reproduction processing on the basis of the decoded video data stored in said decoded video data FIFO.

7. An information storing medium storing data for reproducing a content, said data comprising:

a plurality of data segments forming the content;

header information corresponding to the content;

segment information corresponding to the content; and

delimiter information corresponding to each data segment;

said header information including a horizontal video size, a vertical video size, a video depth, a maximum video data size of the plurality of data segments, and a maximum audio data size of the plurality of data segments; and

said segment information including a first frame number for each of the plurality of data segments, a number of frames in each of the plurality of data

segments, and an address of delimiter information corresponding to each of the plurality of data segments relative to a start of data.

8. The information storing medium as claimed in claim 7, wherein said delimiter information includes a first frame number within a data segment, a number of frames within the data segment, a video data size within the data segment, and an audio data size within the data segment.

9. A data processing method for decoding and reproducing coded data, said method comprising:

storing cache information including a physical start address of each content stored on an information storing medium and additional information corresponding to each content;

obtaining additional information corresponding to a content to be reproduced, and setting storage areas for an audio data FIFO, a video data FIFO, and a decoded video data FIFO on the basis of the additional information corresponding to the content to be reproduced; and

performing a data processing process including obtaining data from a data segment including data to be reproduced according to the physical start address of the content to be reproduced and the additional information corresponding to the content to be reproduced, storing one portion of the data in said audio data FIFO and another portion of the data in said video data FIFO, obtaining the another portion of the data from said video data FIFO, decoding the obtained data, storing the decoded data in said decoded video data FIFO, and reproducing the one portion of the data stored in said audio data FIFO and the decoded data stored in said decoded video data FIFO.

10. The data processing method as claimed in claim 9, wherein the additional information corresponding to each content includes header information and segment information for a corresponding content, the corresponding

content having a plurality of data segments;

the header information includes a horizontal video size, a vertical video size, a video depth, a maximum video data size in the plurality of data segments, and a maximum audio data size in the plurality of data segments; and

the segment information includes a first frame number for each of the plurality of data segments, a number of frames in each of the plurality of data segments, and an address of delimiter information corresponding to each of the plurality of data segments relative to a start of data;

said method further including calculating maximum FIFO storage areas required for decoding and reproducing the content to be reproduced on the basis of information specifying the content to be reproduced and the additional information corresponding to the content to be reproduced, and setting said storage areas for said audio data FIFO, said video data FIFO, and said decoded video data FIFO.

11. The data processing method as claimed in claim 10, wherein

said calculating step includes calculating a size of said storage area for said video data FIFO in bytes according to

$(\text{maximum video data size} \times P)$

and calculating a size of said storage area for said audio data FIFO in bytes according to

$(\text{maximum audio data size} \times P),$

where P is a number of segments to be stored in said video data FIFO and said audio data FIFO, and the maximum video data size and the maximum audio data size are obtained from the cached information stored in said storing step.

12. The data processing method as claimed in claim 10, wherein

said calculating step includes calculating a size of said storage area for said decoded video data FIFO in bytes according to

$(\text{horizontal video size} \times \text{vertical video size} \times$

video depth \times p)

where p is a number of frames to be stored in said decoded video data FIFO, and the horizontal video size, the vertical video size and the video depth are obtained from the cached information stored in said storing step.

13. The data processing method as claimed in claim 9, wherein said data processing process further includes:

performing a first thread including reading a data segment including frame data to be reproduced from said information storing medium, dividing data stored in the data segment into audio data and video data, storing the audio data in said audio data FIFO, and storing the video data in said video data FIFO; and

performing a second thread including decoding the video data stored in said video data FIFO and storing the decoded video data from a frame specified for reproduction in said decoded video data FIFO.

14. A recording medium recorded with a computer program for decoding and reproducing coded data, said program comprising:

storing cache information including a physical start address of each content stored on an information storing medium and additional information corresponding to each content;

obtaining additional information corresponding to a content to be reproduced, and setting storage areas for an audio data FIFO, a video data FIFO, and a decoded video data FIFO on the basis of the additional information corresponding to the content to be reproduced; and

performing a data processing process including obtaining data from a data segment including data to be reproduced according to the physical start address of the content to be reproduced and the additional information corresponding to the content to be reproduced, storing one portion of the data in said audio data FIFO and another portion of the data in said video data FIFO, obtaining the another portion of

the data from said video data FIFO, decoding the obtained data, storing the decoded data in said decoded video data FIFO, and reproducing the one portion of the data stored in said audio data FIFO and the decoded data stored in said decoded video data FIFO.